1. A method of processing a semiconductor substrate, comprising the steps of:

depositing a protective layer on a substrate surface comprising a conductive element;

selectively removing a portion of the protective layer to expose the conductive element of the substrate surface;

depositing a metallic passivating layer onto the exposed conductive element; and

removing at least a portion of the protective layer from the substrate after deposition of the metallic passivating.

2. The method of claim 1, wherein the substrate surface comprises a dielectric material in which the conductive element is disposed.

3. The method of claim 1, wherein the substrate surface comprises a low k dielectric material.

4. The method of claim 1, wherein a portion of the thickness of the protective layer is removed.

5. The method of claim 1, wherein the entire thickness of the protective layer is removed.

6. The method of claim 1, wherein the substrate surface is treated to expose the conductive element prior to deposition of the protective layer.

7. The method of claim 1, wherein the step of depositing a protective layer is accomplished using a technique selected from the group consisting of chemical vapor deposition (CVD), plasma enhance chemical vapor deposition (PECVD), spin on deposition and physical vapor deposition.

8. The method of claim 1, wherein the protective layer comprises an organic material.

9. The method of claim 8, wherein the organic material of the layer is selected from the group consisting of photoresist and amorphous carbon.

10. The method of claim 9, wherein the steps of depositing and processing the photoresist protective layer comprise the steps of:

depositing a photoresist over the substrate surface; and

exposing and developing the photoresist under conditions that do not degrade the substrate surface to expose a selected region of an underlying layer.

11. The method of claim 10, wherein the exposed and developed photoresist is removed after deposition of the metallic passivating layer by ashing or wet chemical etch.

12. The method of claim 9, wherein the steps of depositing and processing the amorphous carbon protective layer comprise the steps of:

depositing an amorphous carbon layer over the substrate surface; and

etching the amorphous carbon layer under conditions that do not degrade the substrate surface.

13. The method of claim 12, wherein the amorphous carbon layer is removed after deposition of the metallic passivating layer by ashing or reactive ion etch.

14. The method of claim 1, wherein the protective layer comprises a dielectric material.

15. The method of claim 14, wherein steps of depositing and processing the dielectric protective layer comprise the steps of:

depositing a dielectric layer over the substrate surface; and

selectively etching the dielectric layer under conditions that do not degrade the substrate surface.

16. The method of claim 15, wherein the dielectric protective layer is removed after deposition of the passivating layer by etching using a technique selected from the group consisting of wet etch, dry etch, reactive ion etch and plasma etch.

17. The method of claim 1, where steps for depositing and processing the protective layer comprise the steps of:

depositing an intermediate layer on the substrate surface;

depositing a protective layer on the intermediate layer;

selectively removing the protective layer to expose the intermediate layer; and

selectively removing the intermediate layer under conditions that do not degrade the conductive element.

18. The method of claim 17, wherein the intermediate layer comprises an etch stop and the protective layer comprises a photoresist.

19. The method of claim 17, wherein the intermediate layer comprises a dielectric material.

20. The method of claim 1, wherein the conductive material comprises copper.

21. The method of claim 1, wherein the passivating layer is selected from the group consisting of ruthenium, tantalum, tungsten, cobalt, palladium, nickel, tin, titanium, molybdenum, platinum, iron, and niobium, and alloys thereof.

22. The method of claim 1, wherein the step of depositing a metallic passivating layer comprises electroless deposition.

23. The method of claim 22,wherein the step of electrolessly depositing a metallic passivating layer comprises the steps of:

depositing an initiation layer on the first conductive material by exposing the substrate to an activation solution;

cleaning the substrate after deposition of the initiation layer; and

depositing a metallic passivating layer on the initiation layer by exposing the initiation layer to an electroless solution.

24. A method of processing a semiconductor substrate, comprising:

steps for depositing a protective layer on the substrate surface comprising a conductive element disposed in a dielectric material;

steps for processing the protective layer to expose the conductive element;

steps for depositing a metallic passivating layer onto the conductive element; and

steps for removing at least a portion of the protective layer from the substrate after electroless deposition.

25. The method of claim 24,wherein the step of depositing a metallic passivating layer comprises the steps of:

steps for depositing an initiation layer on the first conductive material by exposing the substrate to an activation solution;

steps for cleaning the substrate after deposition of the initiation layer; and

steps for depositing a metallic passivating layer on the initiation layer by exposing the initiation layer to an electroless solution.

26. The method of claim 24, where steps for depositing and processing the protective layer comprise the steps of:

steps for depositing an intermediate layer on the substrate surface;

steps for depositing a protective layer on the intermediate layer;

steps for exposing and developing the protective layer to expose the intermediate layer; and

steps for etching the intermediate layer under conditions that do not degrade the conductive element.

27. The method of claim 24, wherein steps for depositing and processing an amorphous carbon protective layer comprise the steps of:

steps for depositing an amorphous carbon layer over the substrate surface; and

steps for etching the amorphous carbon layer under conditions that do not degrade the conductive element.

28. The method of claim 24, wherein the steps for depositing and processing a photoresist protective layer comprise the steps of:

steps for depositing a photoresist over the substrate surface; and

steps for exposing and developing the photoresist under conditions that do not degrade the conductive element.

29. The method of claim 24, wherein the steps of depositing and processing a dielectric protective layer comprise the steps of:

steps for depositing a dielectric protective layer over the substrate surface; and

steps for etching the dielectric protective layer under conditions that do not degrade the conductive element.

30. A system for processing a semiconductor substrate, comprising:

means for depositing a protective layer on the substrate surface comprising a conductive element disposed in a dielectric material;

means for processing the protective layer to expose the conductive element;

means for electrolessly depositing a metallic passivating layer onto the conductive element; and

means for removing at least a portion of the protective layer from the substrate after electroless deposition.

31. The system of claim 30, wherein the steps for depositing and processing a photoresist protective layer comprises the steps of:

means for depositing a photoresist over the substrate surface; and

means for exposing and developing the photoresist under conditions that do not degrade the conductive element.

32. The system of claim 30, wherein the step of electrolessly depositing a metallic passivating layer comprises the steps of:

means for depositing an initiation layer on the first conductive material by exposing the substrate to an activation solution;

means for cleaning the substrate after deposition of the initiation layer; and

steps for depositing a metallic passivating layer on the initiation layer by exposing the initiation layer to an electroless solution.

33. The system of claim 30, where steps for depositing and processing the protective layer comprises the steps of:

means for depositing an intermediate layer on the substrate surface;

means for depositing a protective layer on the intermediate layer;

means for exposing and developing the protective layer to expose the intermediate layer; and

means for etching the intermediate layer under conditions that do not degrade the conductive element.

34. The system of claim 30, wherein steps for depositing and processing an amorphous carbon protective layer comprises the steps of:

means for depositing an amorphous carbon layer over the substrate surface; and

means for etching the amorphous carbon layer under conditions that do not degrade the conductive element.

35. The system of claim 30, wherein depositing and processing a dielectric protective layer comprises:

means for depositing a dielectric layer over the substrate surface; and

means for etching the dielectric layer under conditions that do not degrade the conductive element.

36. A method of processing a semiconductor substrate, comprising the steps of:

depositing a metallic passivating layer onto a substrate surface comprising a conductive element;

masking the passivating layer to protect the underlying conductive element of the substrate surface;

removing the unmasked passivating layer; and

removing the mask from the passivating layer.

37. The method of claim 36, wherein the mask is removed by ashing or reactive ion etch.

38. The method of claim 36, wherein the unmasked passivating layer is removed to expose the underlying substrate surface.

39. The method of claim 36, wherein the unmasked passivating layer is removed by etching.

40. The method of claim 36, wherein the conductive material comprises copper.

41. The method of claim 36, wherein the passivating layer is selected from the group consisting of ruthenium, tantalum, tungsten, cobalt, palladium, nickel, tin, titanium, molybdenum, platinum, iron, and niobium, and alloys thereof.

42. The method of claim 36, wherein the passivating layer is deposited as a continuous film.